



Solutions for a better life.

December 2, 2014

Ms. Stephanie Linebaugh
U.S. EPA – Region 5
77 West Jackson Blvd (SR-6J)
Chicago, Illinois 60604-3590

US EPA RECORDS CENTER REGION 5



512702

RE: Sauget Area 2 Site – October 3, 2002 Unilateral Administrative Order
Groundwater Operable Unit

Dear Stephanie:

Attached, is the September 2014 Quarterly Groundwater Monitoring Event Report for the GMCS.

Any questions, please advise.

Sincerely,

Steven D. Smith
Project Coordinator

cc: Lisa Cundiff – CH2M Hill
Paul Lake – Illinois EPA (2 copies)
Bill Johnson – Solutia



November 20, 2014

Project No.: 063-9678

Mr. Bill Johnson – 2N
Solutia Inc.
575 Maryville Centre Drive
St. Louis, MO 63141

RE: **SEPTEMBER 2014 QUARTERLY GROUNDWATER MONITORING EVENT
SAUGET AREA 2 – SITE R, SAUGET, ILLINOIS**

Dear Mr. Johnson:

Golder Associates Inc. (Golder) is pleased to submit this letter report to Solutia Inc. (Solutia) summarizing the September 2014 Quarterly Groundwater Monitoring Event at Sauget Area 2 – Site R (Site). At the request of Solutia, Golder conducted the quarterly sampling event at the Site from September 22, 2014 through September 25, 2014. The work included the collection of groundwater samples from the 12 monitoring wells in accordance with the Field Sampling Plan (FSP; URS, 2003). This letter summarizes the work performed during the quarterly event and includes Detection Summary Tables (Appendix A) and the Data Validation Report (Appendix B). The Lenexa, Kansas and St. Rose, Louisiana locations of Pace Analytical Services, Inc. (Pace Analytical) and the Savannah, Georgia location of TestAmerica performed analytical testing of the groundwater samples. Laboratory reports are not included in this letter report. Laboratory reports were forwarded directly from Pace Analytical to Solutia.

GROUNDWATER SAMPLING

Groundwater samples were collected from four monitoring well clusters. Each well cluster consists of three two-inch diameter wells, with one well screened in the Shallow Hydrogeologic Unit, one well screened in the Middle Hydrogeologic Unit, and one well screened in the Deep Hydrogeologic Unit. Groundwater was purged and sampled from the 12 wells with a centrifugal positive pressure pump and dedicated polyethylene tubing. Field measurements of pH, specific conductivity, turbidity, and temperature were recorded for all groundwater samples. Purging continued until the turbidity reached or fell below five nephelometric turbidity units (NTUs), or stabilization of field parameters was achieved for one hour, whichever occurred first. Prior to the purging and sampling of the monitoring wells, a synoptic round of water level measurements of the 12 wells was completed.

Groundwater samples were collected directly into laboratory-provided, pre-preserved sample bottles and packed on-Site following chain-of-custody protocol. The following laboratory tests were requested for the groundwater samples and associated quality assurance/quality control (QA/QC) samples:

- Volatile Organic Compounds (United States Environmental Protection Agency - USEPA Method 8260B)
- Semi-Volatile Organic Compounds (USEPA Method 8270C)
- Organochlorine Pesticides (USEPA Method 8081A)
- Chlorinated Herbicides (USEPA Method 8151A)
- Metals (USEPA Method 6010B/7470A)
- Total Organic Carbon (SW846 Method 9060/SM 5310C)

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St. Charles, MO 63301 USA
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Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

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- Total Dissolved Solids (USEPA Method 160.1/SM 2540C)

After collection, the groundwater samples were delivered to the Pace Analytical Service Center in Florissant, Missouri. The samples to be analyzed for volatile organic compounds, semi-volatile organic compounds, metals, total organic compounds, total dissolved solids, and general chemistry parameters were transported to the Lenexa, Kansas laboratory via courier. The samples to be analyzed for chlorinated pesticides were shipped for next day delivery to the St. Rose, Louisiana facility by the Pace Analytical Service Center in Florissant, Missouri. The samples to be analyzed for chlorinated herbicides were shipped for next day delivery to the TestAmerica Savannah, Georgia facility by the Pace Analytical Service Center in Florissant, Missouri.

Groundwater samples were designated by the well number. QA/QC samples consisted of two field duplicates (DUP-1 and DUP-2) collected at BWMW-4M and BWMW-2M, respectively, a matrix spike and matrix spike duplicate (MS/MSD) collected at BWMW-1M, two rinsate blanks (RB-1 and RB-2) collected following the collection of samples at BWMW-2S and BWMW-1M, two field blanks (FB-1 and FB-2), and two trip blanks. Level III data validation was performed on all the analytical data packages, and Level IV data validation was performed on ten percent of the analytical data packages. Some analytical data were qualified; however, no data were rejected.

Sampling equipment was decontaminated prior to mobilizing to the Site, between sample locations, and prior to demobilizing from the Site. Non-dedicated sampling equipment was decontaminated between samples with non-phosphatic detergent solution and a potable water sprayer. Purged groundwater and decontamination water were containerized in an on-Site vertical storage poly-tank.

Work was performed in general accordance with the January 31, 2003 Sauget Area 2 Groundwater Migration Control System FSP and Quality Assurance Project Plan.

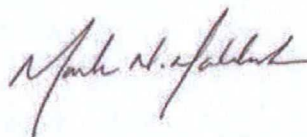
Please contact us if you have any questions about the work or require additional information.

Sincerely,

GOLDER ASSOCIATES INC.



Amanda W. Derhake, Ph.D., P.E.
Project Environmental Engineer



Mark N. Haddock, R.G., P.E.
Associate, Senior Geological Engineer

Attachments

Appendix A – Detection Summary Tables
Appendix B – Data Validation Report

APPENDIX A

DETECTION SUMMARY TABLES

Table 1
Summary of Validated Groundwater Sample Data - Organics (September 2014 Sampling Event)
 Site R Quarterly Groundwater Monitoring
 Solutia Inc - Sauget, Illinois

Monitoring Well		BWMW-1S	MDL	BWMW-1M	MDL	BWMW-1D	MDL	BWMW-2S	MDL	BWMW-2M	MDL	BWMW-2D	MDL
Lab Sample ID		60178733017		60178733016		60178733015		60178733014		60178733013		60178733012	
Date Sampled		9/25/2014		9/25/2014		9/25/2014		9/24/2014		9/24/2014		9/24/2014	
Time Sampled		12 51		10 18		11 00		14 42		10 02		11 08	
Volatile Organic Compounds (USEPA Method 8260B)													
Date Analyzed		9/29/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014	
Analyte	CAS No	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Benzene	71-43-2	6,730	500	391	25 0	92.7 J	50 0	1 0 U	1 0	248	12 5	778	25 0
Chlorobenzene	108-90-7	85,200	500	3,680	25 0	7,740	50 0	154	1 0	2,060	12 5	4,030	25 0
Ethylbenzene	100-41-4	500 U	500	25 0 U	25 0	50 0 U	50 0	1 0 U	1 0	12 5 U	12 5	91.8	25 0
Toluene	108-88-3	500 U	500	25 0 U	25 0	50 0 U	50 0	1 0 U	1 0	12 5 UJ	12 5	67.9	25 0
Xylenes, Total	1330-20-7	1500 U	1500	75 0 U	75 0	150 U	150	3 0 U	3 0	37 5 UJ	37 5	202	75 0
Semi-Volatile Organic Compounds (USEPA Method 8270C)													
Date Prepared		9/30/2014		9/30/2014		9/30/2014		9/30/2014		9/30/2014		9/30/2014	
Date Analyzed		10/3/2014		10/2/2014		10/2/2014		10/6/2014		10/2/2014		10/2/2014	
Analyte	CAS No	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
1,2-Dichlorobenzene	95-50-1	3 1 U	3 1	0 60 U	0 60	2 3 J	0 60	2 0 J	0 59	5 5 U	5 5	52 J	5 9
1,3-Dichlorobenzene	541-73-1	5 2 U	5 2	1 0 U	1 0	1 0 U	1 0	1 0 U	1 0	9 4 U	9 4	18.6 J	10 1
1,4-Dichlorobenzene	106-46-7	6 0 J	3 8	9 3 J	0 76	8 1 J	0 75	1 3 J	0 73	41 8 J	6 9	230 J	7 4
2,4-Dimethylphenol	105-67-9	5 9 U	5 9	1 2 U	1 2	1 2 U	1 2	1 1 U	1 1	10 6 U	10 6	88.7 J	11 4
2-Chlorophenol	95-57-8	67 8	5 2	1 8 J	1 0	3 7 J	1 0	0 99 U	0 99	9 3 U	9 3	10 0 U	10 0
3 & 4 Methylphenol	15831-10-4	4 3 U	4 3	0 86 U	0 86	0 85 U	0 85	0 83 U	0 83	7 8 U	7 8	27.8 J	8 4
4-Chloro-3-methylphenol	59-50-7	6 8 U	6 8	1 3 U	1 3	1 3 U	1 3	1 3 U	1 3	12 2 U	12 2	13 1 U	13 1
4-Chloroaniline	106-47-8	44 5 J	3 1	278 D	6 2	2 4 J	0 61	10 9 J	0 60	8,420 JD	112	38,600 JD	301
Acenaphthene	83-32-9	3 3 U	3 3	0 65 U	0 65	0 64 U	0 64	0 63 U	0 63	5 9 U	5 9	6 3 U	6 3
Anthracene	120-12-7	6 1 U	6 1	1 2 U	1 2	1 2 U	1 2	1 2 U	1 2	11 0 U	11 0	11 8 U	11 8
Benzo[a]anthracene	56-55-3	5 0 U	5 0	0 99 U	0 99	0 98 U	0 98	0 96 U	0 96	9 0 U	9 0	9 7 U	9 7
Benzo[a]pyrene	50-32-8	5 3 U	5 3	1 1 U	1 1	1 0 U	1 0	1 0 U	1 0	9 6 U	9 6	10 3 U	10 3
Benzo[k]fluoranthene	207-08-9	4 0 U	4 0	0 79 U	0 79	0 78 U	0 78	0 77 U	0 77	7 2 U	7 2	7 7 U	7 7
Chrysene	218-01-9	4 7 U	4 7	0 92 U	0 92	0 91 U	0 91	0 89 U	0 89	8 4 U	8 4	9 0 U	9 0
Fluoranthene	206-44-0	6 3 U	6 3	1 3 U	1 3	1 2 U	1 2	1 2 U	1 2	11 4 U	11 4	12 3 U	12 3
Fluorene	86-73-7	3 6 U	3 6	0 71 U	0 71	0 71 U	0 71	0 69 U	0 69	6 5 U	6 5	7 0 U	7 0
Naphthalene	91-20-3	53 9 J	3 2	0 64 U	0 64	0 63 U	0 63	0 62 U	0 62	5 8 U	5 8	6 2 U	6 2
Phenanthrene	85-01-8	4 5 U	4 5	0 89 U	0 89	0 88 U	0 88	0 86 U	0 86	8 1 U	8 1	8 7 U	8 7
Phenol	108-95-2	12 7 J	2 8	0 56 U	0 56	0 55 U	0 55	0 54 U	0 54	5 1 U	5 1	5 5 U	5 5
Pyrene	129-00-0	7 9 U	7 9	1 6 U	1 6	1 6 U	1 6	1 5 U	1 5	14 3 U	14 3	15 4 U	15 4

Parameters not listed were not detected in samples

Results in **bold italics** denote detections

MDL - Method Detection Limit

Flags and Qualifiers

U - Analyte was not detected at or above the Method Detection Limit (MDL)

UJ - Analyte was not detected at or above the Method Detection Limit (MDL), the detection limit is estimated

J - Result is an estimated value

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P - The lower of the two values is reported when the % difference between the results of two GC columns is greater than 40%

D - Compound analyzed at a dilution

JD - Compound analyzed at a dilution result is an estimated value

Prepared by: LAB

Date 10/21/2014

Checked by: JSI

Date 10/31/2014

Reviewed by: AWD

Date 11/17/2014

Table 1
Summary of Validated Groundwater Sample Data - Organics (September 2014 Sampling Event)
 Site R Quarterly Groundwater Monitoring
 Solutia Inc - Sauget, Illinois

Monitoring Well	BWMW-1S	MDL	BWMW-1M	MDL	BWMW-1D	MDL	BWMW-2S	MDL	BWMW-2M	MDL	BWMW-2D	MDL
Lab Sample ID	60178733017		60178733016		60178733015		60178733014		60178733013		60178733012	
Date Sampled	9/25/2014		9/25/2014		9/25/2014		9/24/2014		9/24/2014		9/24/2014	
Time Sampled	12 51		10 18		11 00		14 42		10 02		11 08	
Organochlorine Pesticides (USEPA Method 8081A)												
Date Prepared		9/30/2014		9/30/2014		9/30/2014		9/30/2014		9/30/2014		9/30/2014
Date Analyzed		10/17/2014		10/17/2014		10/17/2014		10/17/2014		10/17/2014		10/17/2014
Analyte	CAS No	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
4,4'-DDD	72-54-8	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
4,4'-DDE	72-55-9	0.050 U	0.050 U	0.052 J	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
4,4'-DDT	50-29-3	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
alpha-BHC	319-84-6	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
alpha-Chlordane	5103-71-9	0.025 U	0.025 U	0.054 P	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.028 J	0.025 U
beta-BHC	319-85-7	0.025 U	0.025 U	0.086 P	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.10 P	0.025 U	0.025 U
delta-BHC	319-86-8	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.028 J	0.025 U	0.025 U
Dieldrin	60-57-1	0.050 U	0.050 U	0.13	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.35 JP	0.050 U	0.091 J
Endosulfan I	958-98-8	0.025 U	0.025 U	0.084 P	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.044 J	0.025 U	0.075 P
Endosulfan II	33213-65-9	0.050 U	0.050 U	0.051 J	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.12 JP	0.050 U	0.38
Endosulfan sulfate	1031-07-8	0.050 U	0.050 U	0.065 J	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.063 J	0.050 U	0.14
Endrin	72-20-8	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Endrin aldehyde	7421-93-4	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.054 J	0.050 U	0.050 U
gamma-BHC (Lindane)	58-89-9	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
gamma-Chlordane	5103-74-2	0.030 J	0.029 U	0.14 P	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U	0.029 U
Heptachlor	76-44-8	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.049 J	0.025 U
Heptachlor epoxide	1024-57-3	0.025 U	0.025 U	0.055 P	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.15 P	0.025 U	0.20 P
Chlorinated Herbicides (USEPA Method 8151A)												
Date Prepared		10/2/2014		10/2/2014		10/2/2014		9/29/2014		9/29/2014		9/29/2014
Date Analyzed		10/6/2014		10/6/2014		10/6/2014		10/6/2014		10/6/2014		10/6/2014
Analyte	CAS No	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Dichloroprop	120-36-5	1.6	0.17	0.18 U	0.18	0.16 U	0.16	0.17 U	0.17	0.17 U	0.17	0.17 U
Total Organic Carbon (USEPA Method 9080/SM 5310C)												
Date Analyzed		10/9/2014		10/9/2014		10/9/2014		10/9/2014		10/9/2014		10/9/2014
Analyte	CAS No	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Total Organic Carbon (TOC)	7440-44-0	11.6 D	1.00	5.1	0.50	5.1	0.50	16.7 D	1.00	14.8 D	1.0	221 D

Parameters not listed were not detected in samples

Results in **bold italics** denote detections

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D - Compound analyzed at a dilution

Prepared by LAB

Date 10/21/2014

Checked by JSI

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Date 11/17/2014

Table 1
Summary of Validated Groundwater Sample Data - Organics (September 2014 Sampling Event)
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 Solutia Inc - Sauget, Illinois

Monitoring Well	BWMW-3S	MDL	BWMW-3M	MDL	BWMW-3D	MDL	BWMW-4S	MDL	BWMW-4M	MDL	BWMW-4D	MDL
Lab Sample ID	60178733008		60178733007		60178733006		60178733005		60178733004		60178733003	
Date Sampled	9/23/2014		9/23/2014		9/23/2014		9/22/2014		9/22/2014		9/22/2014	
Time Sampled	13 47		12 53		11 05		13 46		11 33		12 17	
Volatile Organic Compounds (USEPA Method 8260B)												
Date Analyzed	9/29/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014	
Analyte	CAS No.	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Benzene	71-43-2	19.5	2.5	350	25.0	283	12.5	0.94 J	0.50	29.2	2.5	2.5 U
Chlorobenzene	108-90-7	187	2.5	4,870	25.0	2,870	12.5	15.5	0.50	548	2.5	476
Ethylbenzene	100-41-4	2.5 U	2.5	25.0 U	25.0	12.5 U	12.5	0.50 U	0.50	2.5 U	2.5	2.5 U
Toluene	108-88-3	2.5 U	2.5	25.0 U	25.0	12.5 U	12.5	0.50 U	0.50	2.5 U	2.5	2.5 U
Xylenes, Total	1330-20-7	7.5 U	7.5	75.0 U	75.0	37.5 U	37.5	1.5 U	1.5	7.5 U	7.5	7.5 U
Semi-Volatile Organic Compounds (USEPA Method 8270C)												
Date Prepared	9/25/2014		9/25/2014		9/25/2014		9/25/2014		9/25/2014		9/25/2014	
Date Analyzed	10/6/2014		9/26/2014		9/26/2014		9/26/2014		9/26/2014		9/26/2014	
Analyte	CAS No.	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
1,2-Dichlorobenzene	95-50-1	1.5 J	0.60	1.3 J	0.57	11.7	0.55	0.55 U	0.55	10.3	0.55	232 D
1,3-Dichlorobenzene	541-73-1	1.0 U	1.0	4.7 J	0.98	2.4 J	0.94	0.94 U	0.94	5.1 J	0.94	0.94
1,4-Dichlorobenzene	106-46-7	3.7 J	0.75	9.7 J	0.72	50.0	0.69	1.5 J	0.69	27.0	0.69	80.4
2,4-Dimethylphenol	105-67-9	1.2 U	1.2	1.1 U	1.1	1.1 U	1.1	1.1 U	1.1	1.1 U	1.1	1.1
2-Chlorophenol	95-57-8	1.0 U	1.0	4.1 J	0.97	0.93 U	0.93	0.93 U	0.93	0.93 U	0.93	0.93
3 & 4 Methylphenol	15831-10-4	0.85 U	0.85	0.81 U	0.81	0.78 U	0.78	0.78 U	0.78	0.78 U	0.78	0.78
4-Chloro-3-methylphenol	59-50-7	1.3 U	1.3	1.3 U	1.3	1.2 U	1.2	1.2 U	1.2	1.2 U	1.2	1.2
4-Chloroaniline	106-47-8	8.0 J	0.61	11,400 D	117	7,720 D	56.0	0.56 U	0.56	123 D	1.1	3.1 J
Acenaphthene	83-32-9	1.7 J	0.64	0.61 U	0.61	0.59 U	0.59	0.59 U	0.59	0.59 U	0.59	0.59
Anthracene	120-12-7	2.5 J	1.2	1.1 U	1.1	1.1 U	1.1	1.1 U	1.1	1.1 U	1.1	1.1
Benzo[a]anthracene	56-55-3	2.3 J	0.98	0.94 U	0.94	0.90 U	0.90	0.90 U	0.90	0.90 U	0.90	0.90
Benzo[a]pyrene	50-32-8	1.4 J	1.0	1.0 U	1.0	0.96 U	0.96	0.96 U	0.96	0.96 U	0.96	0.96
Benzo[k]fluoranthene	207-08-9	1.5 J	0.78	0.75 U	0.75	0.72 U	0.72	0.72 U	0.72	0.72 U	0.72	0.72
Chrysene	218-01-9	2.4 J	0.91	0.88 U	0.88	0.84 U	0.84	0.84 U	0.84	0.84 U	0.84	0.84
Fluoranthene	208-44-0	8.1 J	1.2	1.2 U	1.2	1.1 U	1.1	1.1 U	1.1	1.1 U	1.1	1.1
Fluorene	86-73-7	1.6 J	0.71	0.68 U	0.68	0.65 U	0.65	0.65 U	0.65	0.65 U	0.65	0.65
Naphthalene	91-20-3	0.63 U	0.63	0.60 U	0.60	0.58 U	0.58	0.58 U	0.58	0.58 U	0.58	0.58
Phenanthrene	85-01-8	10.4 J	0.88	0.84 U	0.84	0.81 U	0.81	0.81 U	0.81	0.81 U	0.81	0.81
Phenol	108-95-2	0.55 U	0.55	0.53 U	0.53	0.51 U	0.51	0.51 U	0.51	0.51 U	0.51	0.51
Pyrene	129-00-0	6.2 J	1.6	1.5 U	1.5	1.4 U	1.4	1.4 U	1.4	1.4 U	1.4	1.4

Parameters not listed were not detected in samples

Results in ***bold italics*** denote detections

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Flags and Qualifiers

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P - The lower of the two values is reported when the % difference between the results of two GC columns is greater than 40%

D - Compound analyzed at a dilution

JD - Compound analyzed at a dilution, result is an estimated value

Prepared by LAB

Date 10/21/2014

Checked by JSI

Date 10/31/2014

Reviewed by AWD

Date 11/17/2014

Table 1
Summary of Validated Groundwater Sample Data - Organics (September 2014 Sampling Event)
 Site R Quarterly Groundwater Monitoring
 Solutia Inc - Sauget Illinois

Monitoring Well	BWMW-3S	MDL	BWMW-3M	MDL	BWMW-3D	MDL	BWMW-4S	MDL	BWMW-4M	MDL	BWMW-4D	MDL
Lab Sample ID	60178733008		60178733007		60178733006		60178733005		60178733004		60178733003	
Date Sampled	9/23/2014		9/23/2014		9/23/2014		9/22/2014		9/22/2014		9/22/2014	
Time Sampled	13 47		12 53		11 05		13 46		11 33		12 17	
Organochlorine Pesticides (USEPA Method 8081A)												
Date Prepared	9/26/2014		9/26/2014		9/26/2014		9/26/2014		9/26/2014		9/26/2014	
Date Analyzed	10/17/2014		10/17/2014		10/17/2014		10/17/2014		10/17/2014		10/17/2014	
Analyte	CAS No.	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
4,4'-DDD	72-54-8	0.050 U	0.050 0.057 J	0.050	0.050 U	0.050 0.11 J	0.050	0.050 U	0.050	0.050 U	0.050	0.050
4,4'-DDE	72-55-9	0.050 U	0.050 0.15 P	0.050	0.050 0.091 J	0.050	0.050 U	0.050	0.050 0.13 J	0.050	0.050 0.066 J	0.050
4,4'-DDT	50-29-3	0.050 U	0.050	0.050 U	0.050 0.17 J	0.050	0.050 U	0.050	0.050 U	0.050	0.050 U	0.050
alpha-BHC	319-84-6	0.025 U	0.025	0.025 U	0.025 0.21 J	0.025	0.025 U	0.025	0.025 U	0.025	0.025 U	0.025
alpha-Chlordane	5103-71-9	0.025 U	0.025 0.039 J	0.025	0.025 U	0.025	0.025 U	0.025	0.025 U	0.025	0.025 U	0.025
beta-BHC	319-85-7	0.075 P	0.025	0.025 U	0.025	0.025 U	0.025	0.025 U	0.025 0.065 JP	0.025	0.025 U	0.025
delta-BHC	319-86-8	0.025 U	0.025	0.025 U	0.025	0.025 U	0.025	0.025 U	0.025 U	0.025	0.025 U	0.025
Dieldrin	60-57-1	0.050 U	0.41	0.050	0.050 U	0.050	0.050 U	0.050	0.050 U	0.050	0.050 U	0.050
Endosulfan I	959-98-8	0.025 U	0.025 0.29 P	0.025	0.13 J	0.025	0.025 U	0.025	0.11	0.025	0.025 U	0.025
Endosulfan II	33213-65-9	0.050 U	0.050	0.050 U	0.050 0.39 JP	0.050	0.050 U	0.050	0.050 U	0.050	0.050 U	0.050
Endosulfan sulfate	1031-07-8	0.050 U	0.050 0.11 P	0.050	0.050 0.092 J	0.050	0.050 U	0.050	0.061 J	0.050	0.050 U	0.050
Endrin	72-20-8	0.050 U	0.050 0.089 J	0.050	0.050 U	0.050	0.050 U	0.050	0.050 U	0.050	0.050 U	0.050
Endrin aldehyde	7421-93-4	0.050 U	0.050	0.050 U	0.050	0.050 U	0.050	0.050 U	0.050	0.050 U	0.050	0.050
gamma-BHC (Lindane)	58-89-9	0.044 J	0.025	0.025 U	0.025	0.025 U	0.025 0.036 J	0.025	0.025 U	0.025	0.025 U	0.025
gamma-Chlordane	5103-74-2	0.029 U	0.029 0.34 P	0.029	0.029 U	0.029	0.029 U	0.029	0.074 JP	0.029	0.050 J	0.029
Heptachlor	76-44-8	0.025 U	0.025	0.025 U	0.025	0.025 U	0.025	0.025 U	0.025 U	0.025	0.025 U	0.025
Heptachlor epoxide	1024-57-3	0.025 U	0.025 0.29 P	0.025	0.025 U	0.025	0.072	0.025	0.13	0.025	0.025 U	0.025
Chlorinated Herbicides (USEPA Method 8161A)												
Date Prepared	9/25/2014		9/25/2014		9/25/2014		9/25/2014		9/25/2014		9/25/2014	
Date Analyzed	9/27/2014		9/27/2014		9/27/2014		9/27/2014		9/27/2014		9/27/2014	
Analyte	CAS No.	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Dichloroprop	120-36-5	0.17 U	0.17	0.17 U	0.17	0.17 U	0.17	0.17 U	0.17	0.16 U	0.16	0.16 U
Total Organic Carbon (USEPA Method 9060/SM 5310C)												
Date Analyzed	10/8/2014		10/8/2014		10/8/2014		10/8/2014		10/8/2014		10/8/2014	
Analyte	CAS No.	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Total Organic Carbon (TOC)	7440-44-0	6.5	0.50	26.3 D	2.0	11.8 D	1.0	2.9	0.50	3.6	0.50	2.7

Parameters not listed were not detected in samples

Results in **bold italics** denote detections

MDL - Method Detection Limit

Flags and Qualifiers

U - Analyte was not detected at or above the Method Detection Limit (MDL)

UJ - Analyte was not detected at or above the Method Detection Limit (MDL), the detection limit is estimated

J - Result is an estimated value

JP - Result is an estimated value, the lower of the two values is reported when the % difference between the results of two GC columns is greater than 40%

P - The lower of the two values is reported when the % difference between the results of two GC columns is greater than 40%

D - Compound analyzed at a dilution

Prepared by LAB

Date 10/21/2014

Checked by JSI

Date 10/31/2014

Reviewed by AWD

Date 11/17/2014

Table 2
Summary of Validated Groundwater Sample Data - Inorganics (September 2014 Sampling Event)
 Site R Quarterly Groundwater Monitoring
 Soluba Inc - Sauget, Illinois

Monitoring Well	BWMW-1S	MDL	BWMW-1M	MDL	BWMW-1D	MDL	BWMW-2S	MDL	BWMW-2M	MDL	BWMW-2D	MDL
Lab Sample ID	60178733017		60178733016		60178733015		60178733014		60178733013		60178733012	
Date Sampled	9/25/2014		9/25/2014		9/25/2014		9/24/2014		9/24/2014		9/24/2014	
Time Sampled	12 51		10 18		11 00		14 42		10 12		11 08	
Mercury (USEPA Method 7470A)												
Date Prepared	10/6/2014		10/6/2014		10/6/2014		10/6/2014		10/6/2014		10/6/2014	
Date Analyzed	10/7/2014		10/7/2014		10/7/2014		10/7/2014		10/7/2014		10/7/2014	
Analyte	CAS No	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Metals (USEPA Method 6010B)												
Date Prepared	9/29/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014	
Date Analyzed	10/3/2014		10/3/2014		10/3/2014		10/3/2014		10/3/2014		10/3/2014	
Analyte	CAS No	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Arsenic	7440-38-2	60 J	34	34 U	34	4.3 J	34	34 U	34	34 U	34	6.4 J
Barium	7440-39-3	175	0.61	482	0.61	382	0.61	253	0.61	904	0.61	2,020
Chromium	7440-47-3	0.89 U	0.89	0.89 U	0.89	0.89 U	0.89	5.9	0.89	2.6 J	0.89	0.89 U
Copper	7440-50-8	10.0 U	0.85	10.0 U	0.85	10.0 U	0.85	10.0 U	0.85	10.0 U	0.85	10.0 U
Lead	7439-92-1	4.1 J	2.2	2.2 U	2.2	3.6 J	2.2	4.3 J	2.2	2.2 UJ	2.2	5.0 J
Nickel	7440-02-0	1.5 J	0.95	1.5 J	0.95	0.95 U	0.95	4.3 J	0.95	3.1 J	0.95	5.3
Silver	7440-22-4	1.8 J	1.4	1.4 U	1.4	1.4 U	1.4	1.9 J	1.4	1.5 J	1.4	1.4 U
Total Dissolved Solids (USEPA Method 160.1/SM 2540C)												
Date Analyzed	10/1/2014		10/1/2014		10/1/2014		10/1/2014		10/1/2014		10/1/2014	
Analyte	CAS No.	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Total Dissolved Solids (TDS)	-	1,000	50	967	50	1,050	50	1,480	50	1,030	50	1,810

Parameters not listed were not detected in samples

Results in ***bold italics*** denote detections

MDL - Method Detection Limit

Flags and Qualifiers

U - Analyte was not detected at or above the Method Detection Limit (MDL)

UJ - Analyte was not detected at or above the Method Detection Limit (MDL), the detection limit is estimated

J - Result is an estimated value

D - Compound analyzed at a dilution

Prepared by LAB

Date 10/21/2014

Checked by JSI

Date 10/31/2014

Reviewed by AWD

Date 11/17/2014

Table 2
Summary of Validated Groundwater Sample Data - Inorganics (September 2014 Sampling Event)
 Site R Quarterly Groundwater Monitoring
 Solutia Inc - Sauget Illinois

Monitoring Well		BWMW-3S	MDL	BWMW-3M	MDL	BWMW-3D	MDL	BWMW-4S	MDL	BWMW-4M	MDL	BWMW-4D	MDL
Lab Sample ID		60178733008		60178733007		60178733006		60178733005		60178733004		60178733003	
Date Sampled		9/23/2014		9/23/2014		9/23/2014		9/22/2014		9/22/2014		9/22/2014	
Time Sampled		13 47		12 53		11 05		13 46		11 33		12 17	
Mercury (USEPA Method 7470A)													
Date Prepared		10/6/2014		10/6/2014		10/6/2014		10/6/2014		10/6/2014		10/6/2014	
Date Analyzed		10/7/2014		10/7/2014		10/7/2014		10/7/2014		10/7/2014		10/7/2014	
Analyte	CAS No	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Metals (USEPA Method 6010B)													
Date Prepared		9/29/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014	
Date Analyzed		10/3/2014		10/3/2014		10/3/2014		10/3/2014		10/3/2014		10/3/2014	
Analyte	CAS No	(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)		(ug/L)	
Arsenic	7440-38-2	31 2 D	6 7	5 5 J	3 4	3 4 U	3 4	13 2	3 4	3 4 U	3 4	7 5 J	3 4
Barium	7440-39-3	307	0 61	922	0 61	1,180	0 61	156	0 61	444	0 61	117	0 61
Chromium	7440-47-3	1 8 J	0 89	0 89 U	0 89	0 89 U	0 89	7 4	0 89	0 89 U	0 89	0 89 U	0 89
Copper	7440-50-8	22 4	0 85	10 0 U	0 85	10 0 U	0 85	10 0 U	0 85	0 85 UJ	0 85	10 0 U	0 85
Lead	7439-92-1	4 4 J	2 2	4 2 J	2 2	2 2 U	2 2	3 1 J	2 2	5 4 J	2 2	2 2 U	2 2
Nickel	7440-02-0	2 1 J	0 95	5 4	0 95	3 7 J	0 95	3 9 J	0 95	1 9 J	0 95	2 0 J	0 95
Silver	7440-22-4	1 9 J	1 4	1 4 U	1 4	1 8 J	1 4	2 3 J	1 4	1 4 UJ	1 4	1 4 U	1 4
Total Dissolved Solids (USEPA Method 160 1/SM 2540C)													
Date Analyzed		9/29/2014		9/23/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014	
Analyte	CAS No	(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)		(mg/L)	
Total Dissolved Solids (TDS)	-	1,480	5 0	1,470	5 0	1240	5 0	1,950	5 0	878	5 0	777	5 0

Parameters not listed were not detected in samples

Results in ***bold italics*** denote detections

MDL - Method Detection Limit

Flags and Qualifiers

U - Analyte was not detected at or above the Method Detection Limit (MDL)

UJ - Analyte was not detected at or above the Method Detection Limit (MDL), the detection limit is estimated

J - Result is an estimated value

D - Compound analyzed at a dilution

Prepared by LAB

Date 10/21/2014

Checked by JSI

Date 10/31/2014

Reviewed by AWD

Date 11/17/2014

Solutia Inc. - Saugert Illinois

Results in bold (italic) are not detected at or above the Method Detection Limit (MDL).
 MDL - Method Detection Limit
 I - Samples were not detected at or above the Method Detection Limit (MDL).
 U - Samples were not detected at or above the Method Detection Limit (MDL).
 J - Result is an estimated value.
 JP - Result is an estimated value. The lower of the two values is reported when the % difference between the results of two GC columns is greater than 40%.
 P - The lower of the two values is reported when the % difference between the results of two GC columns is greater than 40%.
 D - Compound analyzed at a dilution.
 JD - Compound analyzed at a dilution. Result is an estimated value.

Prepared by LAB
 Checked by JSI
 Reviewed by AMD
 Date 10/21/2014
 Date 10/31/2014
 Date 11/17/2014

Table 4
Summary of Validated Groundwater Sample Data - Inorganics (September 2014 Sampling Event)
 Site R Quarterly Groundwater Monitoring
 Soluta Inc - Sauget Illinois

Monitoring Well	DUP 1	MDL	DUP 2	MDL	RB 1	MDL	RB 2	MDL	FB 1	MDL	FB 2	MDL
Lab Sample ID	60178733009		60178733018		60178733021		60178733020		60178733010		60178733019	
Date Sampled	9/22/2014		9/24/2014		9/24/2014		9/25/2014		9/23/2014		9/25/2014	
Time Sampled	15 20		13 20		11 00		12 15					
Mercury (USEPA Method 7470A)												
Date Prepared	10/6/2014		10/6/2014		10/6/2014		10/6/2014		10/6/2014		10/6/2014	
Date Analyzed	10/7/2014		10/7/2014		10/7/2014		10/7/2014		10/7/2014		10/7/2014	
Analyte	CAS No	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Metals (USEPA Method 6010B)												
Date Prepared	9/29/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014		9/29/2014	
Date Analyzed	10/3/2014		10/3/2014		10/3/2014		10/3/2014		10/3/2014		10/3/2014	
Analyte	CAS No	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
Barium	7440-39-3	455	0.61	897	0.61	0.61	1.0	0.61	0.70	0.61	0.61	0.61
Chromium	7440-47-3	0.89	U	0.89	2.8	U	0.89	0.89	0.89	U	0.89	0.89
Lead	7439-92-1	2.9	J	2.2	4.2	J	2.2	2.2	2.2	U	2.2	2.2
Nickel	7440-02-0	2.0	J	0.95	2.2	J	0.95	0.95	0.95	U	0.95	0.95
Silver	7440-22-4	2.0	J	1.4	1.4	U	1.4	1.4	1.4	U	1.4	1.4
Total Dissolved Solids (USEPA Method 160.1/SM 2540C)												
Date Analyzed	9/29/2014		10/1/2014		10/1/2014		10/1/2014		9/29/2014		10/1/2014	
Analyte	CAS No	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Total Dissolved Solids (TDS)	-	887	5.0	1060	5.0	15.0	5.0	24.0	5.0	5.0	8.0	5.0

Parameters not listed were not detected in samples

Results in ***bold italics*** denote detections

MDL - Method Detection Limit

Flags and Qualifiers

U - Analyte was not detected at or above the Method Detection Limit (MDL)

UJ - Analyte was not detected at or above the Method Detection Limit (MDL) the detection limit is estimated

J - Result is an estimated value

Prepared by LAB

Date 10/21/2014

Checked by JSI

Date 10/31/2014

Reviewed by AWD

Date 11/17/2014

APPENDIX B

DATA VALIDATION REPORT

1.0 INTRODUCTION

Golder Associates Inc (Golder) validated the analytical data for the groundwater samples collected from September 22, 2014 through September 25, 2014 at Solutia Site R in Sauget, Illinois (Site). Samples were collected from a total of twelve (12) groundwater monitoring wells. Field duplicate samples were collected from wells BWMW-4M and BWMW-2M. Two equipment rinsate blanks, two field blanks, and two trip blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Services, Inc. (Pace Analytical) of Florissant, Missouri, which shipped the samples to be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total metals, and general chemistry parameters that night to Lenexa, Kansas via courier. The samples to be analyzed for chlorinated pesticides were shipped for next day delivery to the St. Rose, Louisiana facility by the Pace Analytical Service Center in Florissant, Missouri. The samples to be analyzed for chlorinated herbicides were shipped for next day delivery to the TestAmerica Savannah, Georgia facility by the Pace Analytical Service Center in Florissant, Missouri. The samples were placed into one sample delivery group (SDG) by the laboratory. The SDG is 60178733.

The samples were collected and analyzed in accordance with the Field Sampling Plan for the Groundwater Migration Control System, Sauget Area 2 Superfund Site (FSP, URS, January 2003). Samples were analyzed for VOCs, SVOCs, chlorinated pesticides, chlorinated herbicides, total metals, and general chemistry parameters. The general chemistry parameters were total organic carbon (TOC) and total dissolved solids (TDS). Analytical methods used are from U.S. Environmental Protection Agency (USEPA) document SW-846, Test Methods for Evaluating Solid Waste, Revision 6 contained in Final Update III August 2002 and listed below:

- VOCs were analyzed using Method 8260B Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry
- SVOCs were analyzed by Method 8270C Semi-volatile Organic Compounds by Gas Chromatography/Mass Spectrometry
- Chlorinated Pesticides were analyzed using Method 8081A Organochlorine Pesticides by Gas Chromatography
- Chlorinated Herbicides were analyzed using Method 8151A Chlorinated Herbicides by GC Using Methylation or Pentafluorobenzoylation Derivatization
- Total metals were analyzed in accordance with Method 6010B Inductively Coupled Plasma-Atomic Emission Spectrometry except for mercury, which was analyzed by Method 7470A, Mercury in Liquid Waste (Manual Cold Vapor Technique)

- The general chemistry parameters were analyzed using standard SW-846 methodologies and EPA methodologies contained in Methods for Chemical Analysis of Water and Wastes, March 1983

Data validation was performed following the general guidelines of Section 9.2 of the Quality Assurance Project Plan for the Groundwater Migration Control System, Sauget Area 2 Superfund Site (QAPP; URS, January 2003). The QAPP specifies that the most recent versions of the national data validation guidelines be used for data review. The following guidelines were generally used:

- USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA-540-R-08-01, June 2008
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540-R-04-004, June 2008

These documents are hereafter referred to as the "functional guidelines". If there was a conflict between the functional guidelines and the quality control criteria specified in the analytical method, the method-specific criteria were used. SDG (60178733) was prepared as a Level 4 data report package containing quality control information and raw data.

Data qualifiers are defined in Table 2. Where quality control criteria were met, positive results were not qualified and non-detected results were qualified "U" signifying that the result is below the quantitation limit (organics) or detection limit (inorganics).

Sections 2 through 7 summarize the specific instances where quality control criteria in the functional guidelines were not met. Tables 3 through 8 list the specific samples for which qualification occurred. As specified in the functional guidelines, if the non-adherence to quality control criteria is slight, professional judgment was used in qualification of the data. However, if the non-adherence is significant, qualification and rejection of the data may be necessary.

Following data validation, the qualified data were summarized in tables, which are included in the main body of the report.

2.0 VOLATILE ORGANIC COMPOUNDS

Samples were collected from twelve (12) groundwater monitoring locations and analyzed for VOCs. Field duplicate samples were collected from wells BMWW-4M and BMWW-2M. Two equipment rinsate blanks, two field blanks, and two trip blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Services, Inc., were placed into one data package or SDG (60178733), and were prepared and analyzed using SW-846 Method 8260. Samples were validated in general accordance with the functional guidelines. Results of the validation are summarized below.

2.1 Data Quality Objectives

Precision: Goals for laboratory and field precision were met.

Accuracy: Goals for accuracy were met.

Sample Result Verification: Sample results were supported in the raw data.

Detection Limits: The detection limit goals were achieved for analyses, except where dilutions were required due to elevated levels of target/non-target analytes or matrix interference.

Completeness: The data packages were complete for requested analyses. Twenty (20) samples were reviewed in this data set. A total of 680 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%, with an overall completeness of 100%.

2.2 Major Concerns

There were no major concerns that required rejection of data.

2.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data. Refer to Table 3 for the specific samples affected by each concern.

Reported results with a value greater than the method detection limit (MDL) and lower than the reporting limit (RL) were qualified with estimated values (J).

The relative percent difference (RPD) between duplicates and their associated samples should be within 50%. Positive affected results were qualified with estimated values (J). If an analyte was detected in a duplicate but not in the associated sample, or vice versa, it was qualified with an estimated value in both the positive affected results and the non-detected results (J/UJ).

When a sample was analyzed at a dilution, positive affected results were qualified (D).

If an analyte was detected at the MDL, then the positive result was considered a non-detect value (U)

3.0 SEMI-VOLATILE ORGANIC COMPOUNDS

Samples were collected from twelve (12) groundwater monitoring locations and analyzed for SVOCs. Field duplicate samples were collected from wells BMWW-4M and BMWW-2M. Two equipment rinsate blanks and two field blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Services Inc., were placed into one data package or SDG (60178733), and were prepared and analyzed using SW-846 Method 8270. Samples were validated in general accordance with the functional guidelines. Results of the validation are summarized below.

3.1 Data Quality Objectives

Precision: Goals for laboratory and field precision were met, except where noted below.

Accuracy: Goals for accuracy were met, except where noted below.

Sample Result Verification: Sample results were supported in the raw data.

Detection Limits: The detection limit goals were achieved for analyses, except where dilutions were required due to elevated levels of target analytes or matrix interference.

Completeness: The data packages were complete for requested analyses. Eighteen (18) samples were reviewed in this data set. A total of 1,152 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%, with an overall completeness of 100%.

3.2 Major Concerns

There were no major concerns that required rejection of data.

3.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data. Refer to Table 4 for the specific samples affected by each concern.

Reported results with a value greater than the method detection limit (MDL) and lower than the reporting limit (RL) were qualified with estimated values (J).

If there were two or more surrogate compounds diluted out of a sample, positive affected results were qualified (J).

When a sample was analyzed at a dilution, positive affected results were qualified (D/JD).

4.0 CHLORINATED PESTICIDES

Samples were collected from twelve (12) groundwater monitoring locations and analyzed for chlorinated pesticides. Field duplicate samples were collected from wells BWMW-4M and BWMW-2M. Two equipment rinse blanks and two field blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Services, Inc., were placed into one data package or SDG (60178733), and were prepared and analyzed using SW-846 Method 8081. Samples were validated in accordance with the functional guidelines. Results of the validation are summarized below.

4.1 Data Quality Objectives

Precision: Goals for laboratory and field precision were met, except where noted below.

Accuracy: Goals for accuracy were met, except where noted below.

Sample Result Verification: Sample results were supported in the raw data.

Detection Limits: The detection limit goals were achieved for analyses, except where dilutions were required due to elevated levels of non-target analytes or matrix interference.

Completeness: The data packages were complete for requested analyses. Eighteen (18) samples were reviewed in this data set. A total of 378 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%, with an overall completeness of 100%.

4.2 Major Concerns

There were no major concerns that required rejection of data.

4.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data. Refer to Table 5 for the specific samples affected by each concern.

Reported results with a value greater than the method detection limit (MDL) and lower than the reporting limit (RL) were qualified with estimated values (J).

The relative percent difference (RPD) between duplicates and their associated samples should be within 50%. Positive affected results were qualified with estimated values (J). If an analyte was detected in a duplicate but not in the associated sample, or vice versa, it was qualified with an estimated value in both the positive affected results and the non-detected results (J/UJ).

If there a surrogate compounds exceeded the control limits, positive affected results were qualified (J).

If the difference between the values of the GC columns was greater than 40% and the lower value was reported then positive affected results were qualified (P/JP).

If an analyte was detected at the MDL, then the positive result was considered a non-detect value (U)

5.0 CHLORINATED HERBICIDES

Samples were collected from twelve (12) groundwater monitoring locations and analyzed for chlorinated herbicides. Field duplicate samples were collected from wells BWMW-4M and BWMW-2M. Two equipment rinsate blanks and two field blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Services, Inc. who then shipped the samples to the Savannah, Georgia TestAmerica facility. Samples were placed into one data package or SDG (60178733), and were prepared and analyzed using SW-846 Method 8151. Samples were validated in accordance with the functional guidelines. Results of the validation are summarized below.

5.1 Data Quality Objectives

Precision: Goals for laboratory and field precision were met.

Accuracy: Goals for accuracy were met, except where noted below.

Sample Result Verification: Sample results were supported in the raw data.

Detection Limits: The detection limit goals were achieved for analyses, except where dilutions were required due to elevated levels of target analytes or matrix interference.

Completeness: The data packages were complete for requested analyses. Eighteen (18) samples were reviewed in this data set. A total of 162 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%, with an overall completeness of 100%.

5.2 Major Concerns

There were no major concerns with the sample analyses to warrant rejection of data.

5.3 Minor Concerns

There were no minor concerns with the sample analyses to warrant rejection of data.

6.0 INORGANICS

Samples were collected from twelve (12) groundwater monitoring locations and analyzed for inorganics. Field duplicate samples were collected from wells BWMW-4M and BWMW-2M. Two equipment rinsate blanks and two field blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Service, Inc., were placed into one data package or SDG (60178733), and were prepared and analyzed using SW-846 methods 6010 and 7470. Samples were validated in accordance with the functional guidelines. Results of the validation are summarized below.

6.1 Data Quality Objectives

Precision. Goals for laboratory and field precision were met, except where noted below.

Accuracy. Goals for accuracy were met, except where noted below.

Sample Result Verification. Sample results were supported in the raw data.

Detection Limits. The detection limit goals were achieved for analyses, except where detections were found in calibration blanks.

Completeness. The data packages were complete for requested analyses. Eighteen (18) samples were reviewed in this data set. A total of 180 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%; with an overall completeness of 100%.

6.2 Major Concerns

There were no major concerns that required rejection of data.

6.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data. Refer to Table 7 for the specific samples affected by each concern.

Reported results with a value greater than the method detection limit (MDL) and lower than the reporting limit (RL) were qualified with estimated values (J).

When a compound was detected in a blank (i.e. method, field, rinsate), the five times (ten times for common lab contaminants) rule was applied to affected samples. Results greater than the method detection limit and below five or ten times the blank detection were qualified as non-detects (U).

The relative percent difference (RPD) between duplicates and their associated samples should be within 50%. Positive affected results were qualified with estimated values (J). If an analyte was

detected in a duplicate but not in the associated sample, or vice versa, it was qualified with an estimated value in both the positive affected results and the non-detected results (J/UJ)

When a sample was analyzed at a dilution, positive affected results were qualified (D).

7.0 GENERAL CHEMISTRY

Samples were collected from twelve (12) groundwater monitoring locations and analyzed for TOC and TDS. Field duplicate samples were collected from wells BMWW-4M and BMWW-2M. Two equipment rinsate blanks and two field blanks were prepared and shipped for laboratory analysis. The samples collected for analysis are summarized in Table 1. The samples were submitted to Pace Analytical Service, Inc., were placed into one data package or SDG (60178733), and were prepared and analyzed using SW-846 Method 9060C and 2540C. Samples were validated in accordance with the functional guidelines. Results of the validation are summarized below.

7.1 Data Quality Objectives

Precision. Goals for laboratory and field precision were met.

Accuracy. Goals for accuracy were met.

Sample Result Verification. Sample results were supported in the raw data.

Detection Limits. The detection limit goals were achieved for analyses.

Completeness. The data packages were complete for requested analyses. Eighteen (18) samples were reviewed in this data set. A total of 36 groundwater results were reported of which all were deemed valid. This results in a laboratory completeness of 100%; with an overall completeness of 100%.

7.2 Major Concerns

There were no major quality control concerns identified that required rejection of data.

7.3 Minor Concerns

Identified below are the minor quality control concerns that required qualification of the data. Refer to Table 8 for the specific samples affected by each concern.

When a sample was analyzed at a dilution, positive affected results were qualified (D).

8.0 SUMMARY

Golder validated the data collected during the September 2014 sampling event from Solutia Sauget Site R in general accordance with USEPA functional guidelines. Although some data required qualifications due to quality control criteria that were not achieved, the data were deemed usable. Where a positive result was qualified as estimated, the analyte should be considered present. Similarly, a result that was qualified as an estimated reporting limit should be considered not present for the purposes of this program, although the limit itself may not be precise. The completeness for the entire data set was 100%.

TABLE 1

**SAMPLE POINT IDENTIFICATIONS AND SDG NUMBERS
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
SEPTEMBER 2014 GROUNDWATER SAMPLING EVENT**

SAMPLE POINT I.D.	DATE SAMPLED	VOLATILE ORGANICS	SEMIVOLATILE ORGANICS	PESTICIDES	HERBICIDES	TOTAL INORGANICS	GENERAL CHEMISTRY
Groundwater Samples							
BWMW-1S	9/25/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-1M	9/25/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-1D	9/25/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-2S	9/24/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-2M	9/24/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-2D	9/24/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-3S	9/23/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-3M	9/23/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-3D	9/23/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-4S	9/22/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-4M	9/22/2014	60178733	60178733	60178733	60178733	60178733	60178733
BWMW-4D	9/22/2014	60178733	60178733	60178733	60178733	60178733	60178733
Field Duplicates							
DUP-1	9/22/2014	60178733	60178733	60178733	60178733	60178733	60178733
DUP-2	9/24/2014	60178733	60178733	60178733	60178733	60178733	60178733
Field Blanks							
FIELD BLANK 1	9/23/2014	60178733	60178733	60178733	60178733	60178733	60178733
FIELD BLANK 2	9/25/2014	60178733	60178733	60178733	60178733	60178733	60178733
Trip Blanks							
TRIP BLANK	9/23/2014	60178733	60178733	60178733	60178733	60178733	60178733
TRIP BLANK	9/24/2014	60178733	60178733	60178733	60178733	60178733	60178733
Rinsate Blanks							
RINSATE BLANK-1	9/24/2014	60178733	60178733	60178733	60178733	60178733	60178733
RINSATE BLANK-2	9/25/2014	60178733	60178733	60178733	60178733	60178733	60178733

Notes:

- General Chemistry included total organic carbon (TOC) and total dissolved solids (TDS).
- MS/MSD performed on sample BWMW-1M.

Checked by: LAB
Reviewed by: AWD

TABLE 2

VALIDATION QUALIFIER DEFINITIONS GROUNDWATER MIGRATION CONTROL SYSTEM SAUGET AREA 2 SUPERFUND SITE SEPTEMBER 2014 GROUNDWATER SAMPLING EVENT

Organics

- U - The analyte was analyzed for but not detected.
- J - The analyte was detected and the result is considered an estimated value.
- D - The analyte was detected at a dilution.
- P - The difference between the values of the GC columns was greater than 40% and the lower value is reported.
- JD - Compound analyzed at a dilution; result is considered an estimated value.
- JP - The difference between the values of the GC columns was greater than 40% and the lower value is reported. The result is considered an estimated value.
- UJ - Analyte was not detected at or above the Method Detection Limit (MDL); the detection limit is estimated.

Inorganics

- U - The analyte was analyzed for but not detected.
- J - The analyte was detected and the result is considered an estimated value.
- D - The analyte was detected at a dilution.
- UJ - Analyte was not detected at or above the Method Detection Limit (MDL); the detection limit is estimated.

Checked by: LAB
Reviewed by: AWD

TABLE 3

**VOLATILE ORGANIC COMPOUNDS DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
SEPTEMBER 2014 GROUNDWATER SAMPLING EVENT**

DATE: SEPTEMBER 2014
PROJECT NAME: Solutia Site R
MATRIX: Groundwater
ANALYSIS: VOC
SAMPLE DELIVERY GROUP NUMBERS: 60178733
REVIEWER: Lori Blindner

Project No. : 063-9678

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Reported result greater than the method detection limit and lower than the reporting limit	Acetone, Benzene and Vinyl chloride	J	BWMW-1D, BWMW-4S, DUP-2, and RB-1
The RPD between the duplicate and associated sample is greater than 50%, or analyte was detected in either the duplicate or the sample but not both	cis-1,2 Dichloroethene, Toluene and Xylene	J/UJ	BWMW-2M and DUP-2
Reported at MDL	Benzene	U	BWMW-2S
Compounds analyzed at a dilution	Benzene and Chlorobenzene	D	DUP-1 and DUP-2

Checked by LAB
Reviewed by AWD

TABLE 4

SEMI-VOLATILE ORGANIC COMPOUNDS DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
SEPTEMBER 2014 GROUNDWATER SAMPLING EVENT

DATE: SEPTEMBER 2014
 PROJECT NAME: Solutia Site R
 MATRIX: Groundwater
 ANALYSIS: SVOC
 SAMPLE DELIVERY GROUP NUMBERS: 60178733
 REVIEWER: Lori Bindner

Project No. : 063-9678

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Reported result greater than the method detection limit and lower than the reporting limit	Acenaphthene, Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(k)fluoranthene, 4-Chloroaniline, 2-Chlorophenol, Chrysene, Fluoranthene, Fluorene, Phenanthrene, Pyrene, Phenol, Naphthalene, 2-Chlorophenol, 1,4-Dichlorobenzene, 2,4-Dimethylphenol, 3&4 Methylphenol, 1,3-Dichlorobenzene, and 1,2-Dichlorobenzene	J	BWMW-1S, BWMW-1M, BWMW-1D, BWMW-2S, BWMW-2M, BWMW-2D, BWMW-3S, BWMW-3M, BWMW-3D, BWMW-4S, BWMW-4M, BWMW-4D, DUP-1, DUP-2, FB-1, and RB-2
Surrogates diluted out	4-Chloroaniline, 2,4-Dimethylphenol, 3&4 Methylphenol, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, and 1,4-Dichlorobenzene	J/JD	BWMW-2M, BWMW-2D and DUP-2
Compounds analyzed at a dilution	4-Chloroaniline and 1,2-Dichlorobenzene	D/JD	BWMW-1M, BWMW-2M, BWMW-2D, BWMW-3M, BWMW-3D, BWMW-4M, BWMW-4D, DUP-1, and DUP-2

Checked by LAB
 Reviewed by AWD

TABLE 5

**CHLORINATED PESTICIDES DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
SEPTEMBER 2014 GROUNDWATER SAMPLING EVENT**

DATE: SEPTEMBER 2014

Project No. : 063-9678

PROJECT NAME: Solutia Site R

MATRIX: Groundwater

ANALYSIS: Chlorinated Pesticides

SAMPLE DELIVERY GROUP NUMBERS: 60178733

REVIEWER: Lori Bindner

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Reported result greater than the method detection limit and lower than the reporting limit	4-4'-DDD, 4-4'-DDE, delta-BHC, gamma-BHC, Dieldrin, Endrin, Endosulfan I, Endosulfan II, Endrin aldehyde, Endosulfan sulfate, alpha-Chlordane, gamma-Chlordane, and Heptachlor	J	BWMW-1S, BWMW-1M, BWMW-2M, BWMW-2D, BWMW-3S, BWMW-3M, BWMW-3D, BWMW-4S, BWMW-4M, BWMW-4D, DUP-1, and DUP-2
The RPD between the duplicate and associated sample is greater than 50%, or analyte was detected in either the duplicate or the sample but not both	beta-BHC, delta-BHC, alpha-Chlordane, Dieldrin, Endosulfan II, Endosulfan sulfate, Endrin aldehyde, gamma-Chlordane, and Heptachlor	J	BWMW-2M, BWMW-4M, DUP-1, and DUP-2
Surrogates exceeded control limits	4-4'-DDE, 4-4'-DDT, alpha-BHC, Endosulfan I, Endosulfan II, and Endosulfan sulfate	J/UJ	BWMW-3D
Reported at MDL	alpha-BHC and Endrin aldehyde	U	BWMW-1M and BWMW-3M
The difference between the values of the GC columns was greater than 40% and lower value was reported	4-4'-DDE, beta-BHC, alpha-Chlordane, Dieldrin, Endosulfan I, Endosulfan II, Endosulfan sulfate, Heptachlor epoxide, and gamma-Chlordane	P/JP	BWMW-1M, BWMW-2M, BWMW-2D, BWMW-3S, BWMW-3M, BWMW-3D, BWMW-4M, DUP-1, and DUP-2

Checked by LAB
Reviewed by AWD

TABLE 6

**CHLORINATED HERBICIDES DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
SEPTEMBER 2014 GROUNDWATER SAMPLING EVENT**

DATE: SEPTEMBER 2014
PROJECT NAME: Solutia Site R
MATRIX: Groundwater
ANALYSIS: Chlorinated Herbicides
SAMPLE DELIVERY GROUP NUMBERS: 60178733
REVIEWER: Lori Bindner

Project No : 063-9678

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
None	None	None	None

Checked by LAB
Reviewed by AWD

TABLE 7
METALS DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
SEPTEMBER 2014 GROUNDWATER SAMPLING EVENT

DATE: SEPTEMBER 2014
PROJECT NAME: Solutia Site R
MATRIX: Groundwater
ANALYSIS: Metals
SAMPLE DELIVERY GROUP NUMBERS: 60178733
REVIEWER: Lori Blindner

Project No. : 063-9678

QUALITY CONTROL ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Reported result greater than the method detection limit and lower than the reporting limit	Arsenic, Barium, Chromium, Lead, Nickel, and Silver	J	BWMW-1S, BWMW-1M, BWMW-1D, BWMW-2S, BWMW-2M, BWMW-2D, BWMW-3S, BWMW-3M, BWMW-3D, BWMW-4S, BWMW-4M, BWMW-4D, DUP-1, DUP-2, FB-1, and RB-2
Detection in blank (5X rule)	Copper	U	BWMW-1S, BWMW-1M, BWMW-1D, BWMW-2S, BWMW-2M, BWMW-2D, BWMW-3M, BWMW-3D, BWMW-4S, BWMW-4D, and DUP-1
The RPD between the duplicate and associated sample is greater than 50%, or analyte was detected in either the duplicate or the sample but not both	Lead and Silver	J/UJ	BWMW-2M, BWMW-4M, DUP-1, and DUP-2
Compounds analyzed at a dilution	Arsenic	D	BWMW-3S

Checked by LAB
Reviewed by AWD

TABLE 8

**GENERAL CHEMISTRY DATA QUALIFIER SUMMARY
GROUNDWATER MIGRATION CONTROL SYSTEM
SAUGET AREA 2 SUPERFUND SITE
SEPTEMBER 2014 GROUNDWATER SAMPLING EVENT**

DATE: SEPTEMBER 2014
PROJECT NAME: Solutia Site R
MATRIX: Groundwater
ANALYSIS: TDS and TOC
SAMPLE DELIVERY GROUP NUMBERS: 60178733
REVIEWER: Lori Bindner

Project No. : 063-9678

QUALITY CONTROL			
ISSUE	COMPOUND(S)	QUALIFIER	SAMPLES AFFECTED
Compounds analyzed at a dilution	TOC	D	BWMW-1S, BWMW-2S, BWMW-2M, BWMW-2D, BWMW-3M, BWMW-3D, and DUP-2

Checked by LAB
Reviewed by AWD